WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Assessment of Non-Performing Loans on Deposit Money Banks' Performance During the Digitalized Banking Policy in Nigeria

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DOI: https://doi.org/10.55248/gengpi.5.0424.1137

A B S T R A C T:

This research examines the impact of non-performing loans (NPLs) on the performance of Deposit Money Banks (DMBs) in Nigeria in the context of digitalised banking policy. The Central Bank of Nigeria (CBN) has furnished data and financial accounts of eight chosen banks, focusing on the extensive implementation of digital banking policies. The Panel Autoregressive Distributed Lag (ARDL) model examines the association between NPLs and DMBs performance in Nigeria. The return on equity methodology is utilised to evaluate the performance of DMBs. The findings indicate that NPLs have not substantially impacted the performance of the selected banks, even when considering recent data encompassing the post-implementation period of the digitalisation strategy. The coefficient of regression for the results, which is -1.234659, suggests a negative association between NPLs and the performance of DMBs, as shown by the return on equity (ROE). This study contributes to the existing body of information by reaffirming that NPLs exhibit an inverse relationship with banks' return on equity (RTE). Policymakers and financial organisations must acknowledge the intricate dynamics present within the Nigerian banking system. The study suggests that maintaining digitalisation efforts can help mitigate the adverse effects of NPLs on DMBs.

Keywords: Bank Performance, Deposit Money Banks, Digital Banking, Non-performing loans, Panel ARDL Model. **JEL Classification: G21**

1. INTRODUCTION

To facilitate the digitisation of the financial system and mitigate instances of kidnapping for ransom, the CBN has implemented measures to restrict cash transactions and enforce penalties for non-compliance (Abdulazeez & Magaji, 2023). Before the implementation of the cashless policy, DMBs utilised lending principles to address loan requests made by customers (Ayuba et al., 2003). Digital banking can swiftly authorise loans using online platforms, primarily relying on the clients' account transaction history (Eke et al., 2022). Consequently, the rise in NPLs has a detrimental impact on the operational efficiency of banks.

The loan portfolio is a vital asset and a crucial bank revenue stream (Aballey, 2009). DMBs are recognised for their practice of accumulating deposits and allocating loans as their primary means of generating revenue (Igwe et al., 2021), contingent upon the accessibility of money (Magaji & Yahaya, 2012). Before the advent of digitisation, Okoroafor et al. (2018) found that despite the significant profits banks derived from their loan portfolios, there was evidence of loan defaults that had a detrimental effect on their overall financial performance. Natural language processing (NLP) impacts the credit risk assessment system. Hence, it is imperative to establish a robust framework that can effectively identify credit risks promptly and optimise the lender's investment portfolio for favourable results (Jandaghi, 2021).

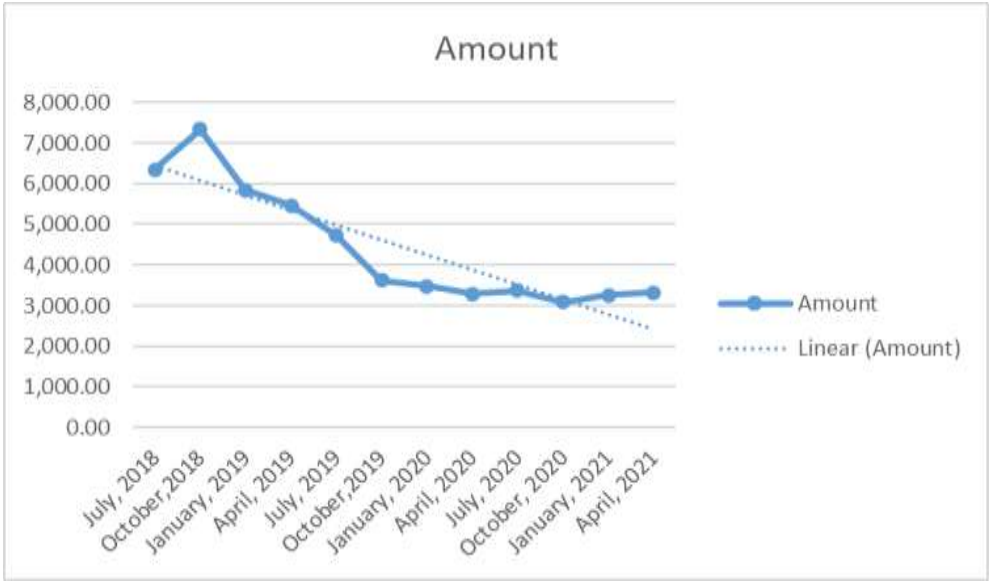
The lending risk was elevated because of the prolonged duration of loan disbursements to recipients and the potential occurrence of loan defaults (Magaji & Musa, 2023). Considering this, the management of loans confers advantages to the borrower, the nation, and the performance of financial institutions. The lack of efficient loan management practices would lead to a substantial proportion of non-performing loans comprising most of a bank's assets. Consequently, this phenomenon significantly impacts the operational efficiency of financial institutions and the overall economic well-being, as stated by the Central Bank of Nigeria in 2012.

The presence of NPLs in a bank's loan portfolio has significant implications for its operational efficiency, profitability, liquidity, and solvency (Michael et al., 2006). According to Batra's (2003) research, bankers' psychological reactions towards NPLs significantly influence their credit allocation and distribution decision-making process. According to Magaji et al. (2022), bankers exhibit diverse perspectives and attitudes toward borrowers across different locations. Stakeholders such as investors and creditors can enhance their decision-making processes by evaluating the financial data of the industry (Golmohammadi, 2022; Magaji, @004).

Caporale et al. (2014) suggest that NPLs serve as a constraining element on the efficacy of the banking sector in fostering economic growth. The banking sector in Nigeria holds a crucial position in fostering economic growth and development (Magaji et al., 2014).

The digitalisation process can potentially elevate NPLs and threaten the financial viability of DMBs in Nigeria. Additionally, it could decrease the Bank's profitability and capacity to act as an intermediary. According to Bhattarai (2017), bank failure can be attributed to a significant presence of NPLs within the banking sector. The banking sector holds significant importance in the economy, so any unforeseen event or shock would inevitably affect the financial system and the overall economy (Chinedu et al., 2021).

1.1 The trajectory of non-performing loans in Nigeria: The assessment of NPLs is of utmost importance as it enables banks to apply pragmatic measures to address the challenge of increasing NPLs. This, in turn, enhances their capacity to generate revenue and sustain their operational activities.



Source: www.CEICDATA.COM/EEICData and Authors' Computation

Figure 1: Amount of NPLs in Nigeria

Figure 1 illustrates the monetary values of NPLs in Nigeria, denominated in Naira, from July 2018 to April 2021. Based on the available data, a general decline was observed in NPLs from July 2018 to April 2021. The observed trend in Nigeria's decreasing NPL inventory indicates a positive development, which is generally beneficial for the stability of the banking sector and the overall economy. This suggests that banks were progressively reducing their level of exposure to NPLs. The marginal rise in NPLs observed in April 2020 can be ascribed to the adverse impact of the COVID-19 epidemic, which has resulted in financial hardships for numerous borrowers.

Figure 2: Percentage of NPLs in Nigeria

Figure 2 illustrates the proportions of NPLs in Nigeria from 2013 to 2020 and highlights instances where the data exhibits a consistent pattern. The graph displays the temporal trends of Nigeria's fraction of NPLs through a dotted linear levelling technique. The bar graphs illustrate a notable upward trend in percentages throughout the immediate time preceding 2018, suggesting a pronounced issue in the quality of loans. From 2018 onwards, a substantial decrease was observed in the proportion of NPLs.

The study is intrigued by the query regarding the impact of NPLs on the performance of DMBs in Nigeria. This study aims to evaluate the impact of NPLs on the performance of DMBs in Nigeria following the introduction of digital banking.

Ho_1: The Return on Equity performance of Nigeria's Deposit Money Banks is not significantly affected by NPLs.

Ho_2: The Return on Equity performance of Nigeria's Deposit Money Banks is significantly affected by NPLs.

2. LITERATURE REVIEW:

2.1 Non-performing loans (NPLs)

NPLs refer to loans that have not been serviced according to the agreed-upon terms and conditions, resulting in a deterioration. A loan in arrears refers to a sum of money that has been borrowed and for which the borrower has had a delay in making payments, often for 90 to 180 days (Investopedia, 2022). As per the information provided by Wikipedia (2022), an NPL refers to a financial obligation extended by a bank to a borrower that is either incapable of being fully repaid or is deemed improbable to be repaid in its whole. According to Atoi (2018), NLP is seen as inferior quality, questionable, and loans that need to be found. According to the World Bank (2021), NPLs are defined as the proportion of the gross loan value, as indicated in the balance sheet, concerning the overall value of the loan portfolio. NPLs are characterised by borrowers' non-compliance with the agreed repayment schedule.

2.2 Digitalized Banking

Digital banking encompasses the utilisation of electronic signatures and mobile banking applications on smartphones to facilitate transactions, enhancing efficiency and convenience for consumers (Tenta et al., 2020). There is a notable transition towards providing online and digital banking services and the use of emerging technologies like blockchain and artificial intelligence for automated loan application, processing, and disbursement (Eke et al., 2022). The multidimensional nature of the impact of digitalisation on many aspects of credit institution operations has been seen (Potapova et al., 2022). Digital banking is the ongoing use of contemporary technology to provide efficient and effective services without temporal limitations.

2.3 Credit Risk Theory

This observation indicates that credit risk has been a persistent concern throughout history. At the same time, its significance as a scholarly inquiry subject has recently gained prominence. The utilisation of traditional actuarial methods for assessing credit risk in early literature before 1974 was widespread; nevertheless, a notable limitation of these methods was their heavy dependence on historical data. Crosbie et al. (2003) elucidate that three distinct quantitative methodologies exist for evaluating credit risk: the structural approach, the reduced form assessment, and the missing information approach. The idea, sometimes called the structural theory, was initially established by Melton (1974), who posited that the default event arises from expanding a firm's assets through a transmission process characterised by constant parameters. These models are constructed based on variables linked to a specific issuer. The progress of this category is represented by a group of models that incorporate a predetermined loss condition in the event of default. In the models, it is essential to note that the occurrence of default in a corporation bond is not limited solely to its maturity date.

2.4 Theoretical Framework of NPLs

A seminal work by Akerlof in 1970 highlights the potential difficulties of distinguishing between borrowers with unfavourable and those with favourable creditworthiness. This distinction, if not accurately made, can lead to adverse selection and moral hazard. Cottarelli et al. (2005) illustrate the impact of loan growth on bank risk-taking and instability, building upon the theoretical framework provided.

2.5 Empirical Review

Ollakua and Aliu (2021) conducted a study examining the influence of NPLs on the profitability of banks in Kosovo from 2010 to 2019. The researchers employed the traditional profit theory and computed profit using the Return on Assets metric. The control variables considered in the analysis were NPLs, liquidity risk, and bank size. When all other variables are controlled for, the findings indicate a statistically significant relationship between NPLs and profitability. Specifically, a 1% rise in NPLs is associated with a 0.19% fall in Return on Assets.

Eniale (2020) conducted a study examining the crucial role of commercial banks as financial intermediaries in facilitating cash transfers from entities with excess funds to those with deficits. The primary objectives of commercial banks include pursuing profitability, expanding their asset base, and attracting a more extensive customer base. This study investigates the impact of NPLs on commercial banks operating in Nigeria. Eniale's inquiry utilises the Ordinary Least Square (OLS) method to reveal a negative relationship between loan defaults and the financial performance of the banks under study. As a recommendation, he proposes implementing a comprehensive evaluation and credit scoring procedure before providing loans to customers.

Alade (2020) conducted a study that explores the impact of credit standards and lending terms and conditions on the management of delinquencies in Nigerian banks. The researcher employed static panel regression estimates as the analytical techniques, including pooled regression, random effect estimation, fixed effect estimation, and the Hausman test. The findings of his study indicate that lending terms have a beneficial impact on the loan portfolio. In contrast, NPLs have a considerable negative effect on the financial performance of commercial banks.

In his study, Arif (2020) employed a sample size of 150 participants to assess the performance of banks in the Java region. The researcher utilised Structural Equation Modelling (SEM) using the Analysis of Moment Structures (AMOS) software for data analysis. The findings of his study indicate that several elements, including business prospects, debtor performance, and ability to pay, have a positive and statistically significant influence on the success of banks. However, empathic credit risk negatively impacts the potential for corporate growth, the debtor's ability to meet financial obligations, and the capacity to repay loans.

The comprehensive analysis conducted by Oganda et al. (2019) delves into the influence of NPLs on the operational efficiency of commercial banks in Kenya. Their research mainly focuses on conducting a comparative analysis of Equity Bank Limited and National Bank Kenya. The findings of their study, which utilised a correlational research strategy, demonstrate that NPLs display a substantial negative regression coefficient of -0.473 and a Pearson correlation coefficient (r) of -0.338 for the Bank, showing a statistically significant relationship with performance. Moreover, a significant correlation with performance is observed, as indicated by a regression coefficient of -0.031 in the National Bank of Kenya context.

In their study, Patwary and Tasneem (2019) utilise the Vector Auto Regression (VAR) model to analyse the banking industry in Bangladesh. The results of their study reveal a statistically significant correlation between the ratio of NPLs and the return on assets (ROA).

Similarly, the research conducted by Gabriel et al. (2019) investigates the impact of NPLs on the financial performance of commercial banks in Nigeria over 31 years, from 1985 to 2016. Nevertheless, their research is constrained to data collected before digitalisation. Multiple regression techniques are employed for their assessment. The results indicate that NPLs and the Cash Reserve Ratio (CRR) have a statistically significant negative impact on Return on Assets (ROA), diminishing banks' financial performance. Nevertheless, it is essential to acknowledge that their research predominantly focused on Nigeria's banking sector before digitalisation.

In this study, Sufian and Habibullah (2019) examine the impact of non-performing loans (NPLs) on the financial performance of banks. The fixed effects model (FEM) is employed to examine macroeconomic influences and institution-specific causes. The results of their study indicate that some characteristics specific to banks, such as the level of loans, credit risk, and costs, have a positive and significant effect on profitability.

The research conducted by Echobu (2019) investigates the impact of credit risk on the financial performance of commercial banks in Nigeria during the period spanning from 2009 to 2017. The researcher utilised data extracted from the audited financial reports of all Nigerian banks as of December 31, 2017. The findings of the regression analysis indicate that NPLs and impaired loan charge-offs have a noteworthy and adverse effect on the performance of banks. However, it is worth noting that while capital sufficiency negatively influences financial performance, this impact is not statistically significant. The report suggests that commercial banks should enhance their risk management strategies to mitigate the occurrence of late loans.

In their study, Okor et al. (2019) restrict their investigation to data exclusively sourced from Nigeria, covering the period between 1985 and 2016. NPLs are assessed through the application of multiple regression analysis on institutional data. The study's results suggest that the proportions of NPLs to total loans and cash reserves harm return on assets (ROA).

In a study by Oladimeji (2016), the objective was to empirically evaluate the correlation between NPLs and the financial performance of Nigerian banks. The loan loss provision ratio and the NPLs ratio are two proxies employed to represent the independent variables. A sample of fifteen banks was selected from the twenty-one banks that comprised the country's banking sector after 2014. The regression analysis conducted on the financial accounts of banks from 2009 to 2013 reveals a significant association between the variables under investigation. In summary, the collective findings indicate a significant inverse correlation between NPLs and the financial well-being of banks in Nigeria.

The study conducted by Atoi (2018) investigates the influence of non-performing loans (NPLs) on the stability of Nigerian banks that possess both national and foreign operational licences throughout the period spanning from 2014 to 2017. The researchers assessed the macroeconomic and bank-specific factors that impact NPLs in each respective case, employing a robust dynamic Generalised Method of Moments (GMM) methodology. A Z-score was developed to assess the level of financial stability, and it exhibits distinct responses to NPL shocks among the two categories of banks.

In their study, Karim et al. (2018) employed the Logit regression model to analyse data obtained from databases in Singapore and Malaysia from 2010 to 2015. The findings of their inquiry suggest that a rise in NPLs is associated with a decline in cost-effectiveness. Conversely, enhanced cost-effectiveness attained through improved loan monitoring and policy execution leads to a decrease in NPLs.

In a study conducted by Adebisi and Matthew (2015), statistical methods such as the T-test and correlation analysis were employed to investigate the impact of NPLs on the financial performance of Nigerian banks. The researchers utilised data from 2006 to 2012, a period preceding the advent of widespread digitisation. Based on the results of their investigation, there was no discernible impact of NPLs on the total value of a company's assets. Furthermore, a discernible association was observed between NPLs and ROE.

In their study, Gizaw et al. (2015) employ a panel data regression model to examine the impact of NPLs on the profitability of commercial banks in Ethiopia. The credit risk criteria employed by these organisations substantially impact their profitability.

Ugoani (2016) conducted a study that examined the portfolios of NPLs and their impact on the profitability of certain commercial banks in Nigeria. The study utilises a probit model in conducting a regression analysis, which reveals that the implementation of flexible repayment schedules, the maintenance of moderate interest rates, and the effective utilisation of loans all substantially impact reducing NPL portfolios. Consequently, these factors contribute to the improvement of bank profitability.

Saba et al. (2015) examined the impact of macroeconomic and bank-specific factors on NPLs within the US banking industry in their study. The investigation spanned the period from 1985 to 2010 and incorporated various independent variables, such as the total liquidity ratio, lending rate, and real GDP per capita. The ordinary least squares (OLS) regression model results indicate that the absolute total liquidity ratio exhibited a positive but statistically negligible impact on NPLs. Conversely, the interest rate and GDP per capita demonstrated a negative association.

2.6 Research Locale

The research centred on NPLs and their impact on the financial well-being of eight Nigerian deposit money banks throughout the period spanning from 2014 to 2020. During this era, a significant wave of bank consolidation resulted in many mergers and acquisitions inside the nation. Additionally, this period witnessed the implementation of a cashless policy. The selected financial institutions comprise Wema Bank, Guarantee Trust Bank, Fidelity Bank, United Bank for Africa, First Bank of Nigeria, Unity Bank, Zenith Bank, and First City Monument Bank. The Nigerian deposit money in these case studies exemplify banks. Nigeria now has 22 deposit money banks that are officially registered and operational. The present study employs a rigorous methodology to investigate the research question.

The study utilises two primary data sources: the financial statements of the eight banks under investigation and the yearly reports published by the CBN. The financial statements encompassed seven years, spanning from 2014 to 2020. This pertains to the era of bank consolidation, which led to many mergers and acquisitions inside the nation. The research employed the Panel Autoregressive Distributed Lag Model (ARDL) methodology to examine the impact of NPL on the operational efficiency of DMBs in Nigeria. The study utilised a dataset spanning the years 2014 to 2020. The study focused on a sample of eight banks listed on the NSE, spanning seven (7) years and resulting in 70 observations.

The provided data is displayed in the tables presented below:

Table 1. The Banks' Selection

	Number of firms
Bank listed on the NSE	24
Selected banks	8
Total Observations	365

Table 2. List of Eight (8) Selected Banks

Table 2, as shown below, reveals the list of all the eight (8) selected banks considered for this study.

S/N	**SELECTED BANKS**
1	Wema bank Plc
2	Guaranteed Trust Bank Plc
3	First Bank Plc
4	Zenith Bank Plc
5	Unity Bank Plc
6	Fidelity Bank Plc
7	United Bank for Africa (UBA) Plc
8	First City Monument Bank (FCMB)Plc

3.1 Data Analysis

Using information from the selected banks' annual reports, a panel ARDL model analysis was used to estimate ROE and the loan loss ratio. Linear regression analysis determines the relationship between loan defaults and their effects on lending and profitability.

3.2 Model Specification

3.3 The Panel-ARDL Model

The panel ARDL limits testing approach to co-integration was used in the study, designed with the theoretical framework and study aims in mind. Incomparable research, many earlier studies have used the same paradigm (Wang & Li, 2015; Magaji & Abubakar, 2011). The equation's general form is provided as follows.

Given that:

3.4 Model $RT = f(NPL)$ **(1)**

Return on Total Equity (RTE) measures how profitable a company is. A greater RTE indicates more effective and efficient use of a company's resources to produce profits, whilst a lower RTE suggests the opposite.

NPLs are critical indicators of credit risk since they evaluate the calibre of credit. NPLs are the number of loans defaulted by more than 90 days.

$$RTE = \beta 0 + \beta 1NP + \mu \quad (2)$$

Where:

β0 = Intercept of relationship in the model/constant

β1 = Coefficients of each explanatory variable

μ = Stochastic or Error term

To capture both the short-run and long-run relationships and the correlation matrix, Pesaran and Shin (1997) developed the panel ARDL model, which would be used to analyse the data. The panel-ARDL dynamic specification model is defined as follows by Perasan et al. (1999):

$$yit = \sum_{j=1}^{p} \lambda ijyi, -j \sum_{j=0}^{q} \sigma ij\text{Xi, t} - \text{j} + \mu\text{i} + \varepsilon\text{it} \quad (3)$$

Where:

Yit = dependent variable for group I and

Xi,t-j = a KX1 vector explanatory variable for group I,

σij = are the KX1 vector of coefficients.

The groups are shown as i =1,2…….N time periods as t =1,2,…….

t and μ = the fixed effects.

The short-run and long-run dynamic panel models are depicted as follows:

$$\Delta yit = (\phi iyi, t - 1 + Y_t^1\text{Xi,t})\sum_{j=1}^{p-1} \lambda ijyi, t - j \sum_{j=0}^{q-1} \sigma_{ij}^{*}\text{Xi, t} - 1 + \mu\text{t} + \varepsilon\text{it} \quad (4)$$

Where:

$\Delta yit = yit - yi, t - 1, \phi i \; is \; the \; speed \; of \; adjustment$

If ϕi = 0, no long-run relationship.

$(\phi iyi, t - 1 + Y_t^1\text{Xi, t})$ = Error correction term, which represents the long-run model

$$\sum_{j=1}^{p-1} \lambda ijyi, t - j \sum_{j=0}^{q-1} \sigma_{ij}^{*}\text{Xi, t} - 1 + \mu\text{t} + \varepsilon\text{it} \quad (5)$$

$$= \text{the short run model.}$$

Thus, the panel-ARDL model of NPLs and bank performance is given as follows:

$$\Delta ROEit = \Delta(\phi iRTEi, t - 1 + \beta 1NPL + Y_t^1\text{Xi,t} + \alpha 1NPL + Y_t^1\text{X}_2\text{,t})) + \sum_{j=1}^{p-1} \lambda ijRTEi, t - j + \Sigma_{j=1}^{p-1} \delta_{ij}^{*} NPL + \sum_{j=0}^{q-1} \sigma_{ij}^{*}\text{Xi, t} - 1 + \mu\text{t} + \varepsilon\text{it}) \quad (6)$$

4. Descriptive Statistics

Table 3: Descriptive statistic

	RTE	**NPL**
Mean	0.876200	12.33012
Median	1.125714	8.362810
Maximum	7.993590	18.55112
Minimum	-6.213709	7.784020
Std. Dev.	1.982090	3.650001
Skewness	-0.469819	2.346460
Kurtosis	7.249409	12.433001
Jarque-Bera	4735103	110.3400
Probability	0.0000000	0.000000
Sum	52.57194	-1120.541
Sum Sq. Dev.	231.7912	17730.12
Observations	56	56

Source: Author's computation (2022)

For the variables employed in this investigation, descriptive statistics are shown in Table 1. The average RTE is 0.87%, with the lowest RTE at -6.21% and the highest RTE at 7.99%. While the jarque bera is 110.34, the mean of non-performing loans is 12.33, with lowest and maximum values of 18.53% and 7.78%, respectively.

Table 4: RTE and NPL

Variable	**Coefficient**	**S. E**	**t-statistic**	**Prob.**
Long-run Equation				
NPL	0.329230	0.030456	10.80990	0.0000
Short-run Equation				
COINTEQ01	-0.827064	0.152050	-5.439786	0.0000
D(NPL)	-1.234659	1.135820	-1.088022	0.2901
C	0.127453	0.037580	3.388710	0.0018
Log-likelihood	102.4225			

Source: Author's computation (2022).

Note: It is important to note that the P-values and tests used do not consider the model's selection.

Conversely, Table 4 presents the result for RTE (dependent variable) and NPL (independent variable) for 2014–2020. Running the Panel ARDL model on E-Views and selecting the Hannan-Quinn criterion with one lag revealed that the resulting *p*-value (<0.05) equalled 0.2901, signifying a lack of significance. Accordingly, the study's hypothesis signifies that NPLs have no significant favourable influence on RTE in the eight DMBs in Nigeria accepted.

4.1 Test of Hypotheses

4.2 Hypothesis: Non-performing loans (NPL)

Based on the information provided in Table 4.4, it can be shown that the regression coefficient of -1.234659 indicates a negative correlation between NPL and performance, specifically in terms of RTE. This coefficient of -1.234659 indicates that a higher NPL adversely affects the selected banks' performance, as indicated by RTE. Therefore, decreasing or declining the non-performing loans ratio would likely improve RTE.

Nevertheless, it is essential to acknowledge that the p-value of 0.2901 suggests no statistically significant relationship between NPL and RTE. Consequently, the null hypothesis is supported, suggesting that there is no statistically significant impact of non-performing loans on the performance of banks in Nigeria. It is interesting to observe that despite the implementation of digitalisation policies and the use of up-to-date data, this finding aligns with the results obtained in previous studies by Eniale (2020), Alade (2020), Ugoani (2016), and Oladimeji (2016).

4.3 Non-Performing Loan (NPL) and Banks Performance in Nigeria

As evident in Table 4.4 and as elaborated in the hypothesis test detailed in the preceding section, the null hypothesis, which stated that there is no significant impact of NPL on the performance of Nigerian banks, was rejected. This decision was reached because the outcome indicated that the regression coefficient of -1.234659 highlights an inverse correlation between NPL and performance, as assessed through RTE. Thus, the regression coefficient of -1.234659 suggests that NPLs have a detrimental effect on the performance of the chosen banks, as assessed by the return on equity (RTE). Nevertheless, the p-value of 0.2901 suggests that the observed influence lacks statistical significance. This result is evident in the subsequent losses that banks sustain because of their inability to recover both the interest and the original amount of the loan from the customer; hence, such loans are written-off as charges against banks' earnings, which will further force the return on shareholders' equity to fall drastically. This result conforms to the findings of Eniale (2020), Alade (2020), Ugoani (2016) and Oladimeji (2016), who evaluated the quantitative influence of NPLs on the performance of DBMs in Nigeria.

5. Conclusion

The findings of this research offer valuable insights into the relationship between NPLs and the operational efficiency of deposit money banks in Nigeria. The research conducted revealed that there exists a negative correlation between NPLs and ROE. However, it was observed that there is a positive association between NPLs and panel ARDL analysis. The statistical significance of NPLs on the RTE is negligible. The findings suggest a positive correlation between the decrease in NPL ratios and the improvement in ROE. Nevertheless, based on the obtained p-value of 0.2901, insufficient statistical evidence exists to reject the null hypothesis, thereby indicating its plausibility. This suggests that NPLs does not significantly benefit RTE within the scope of the eight banks that were examined for seven years, from 2014 to 2020.

Therefore, by reaffirming the concept that NPLs exhibit an inverse relationship with the RTE of banks, this research contributes to the existing corpus of knowledge. Policymakers and financial institutions must acknowledge the intricate dynamics present in the Nigerian banking sector, specifically concerning the handling of NPLs. They should develop strategies that effectively address the potential adverse outcomes while fostering sustainable and resilient financial performance within DMBs.

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